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JULY
1950

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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EDITORIAL



MAGAZINE

Occasionally I take the opportunity to report to members the difficulties which arise in the production of your magazine.

Since the July 1949 issue, except for the past few months, every member throughout Australia received his or her magazine within a few days of the first of each month. This has been possible only by the prompt arrival of all Divisional notes by the 8th of each month.

I don't know if the strain has been too much for some correspondents for over the past few months, notes have been dribbling in up to ten days after the 8th. The nett result has been late delivery of the magazine.

I have many times stressed the fact that any notes arriving after the deadline will not be considered for publication, and if I had strictly enforced this policy there would, over the past few months, have been a number of offended correspondents as well as a large number of members to whom the correspondent is responsible.

I am quite well aware that the person who is held responsible, by the general member for the non appearance of notes, or the late delivery of the magazine, is the undersigned. Nevertheless, I believe I can take it and for the future, let it be plainly understood that Divisional and zone notes MUST be in my hands not later than the 8th of each month.

The 8th of each month has been agreed upon as a deadline, but there is no reason why notes if complete cannot be forwarded by the 1st or the 3rd as the case may be—the earlier they arrive the easier the task of producing the magazine becomes. Your Magazine Committee is an energetic and hard working Committee and anything which makes their task easier is very much appreciated.

To those of you who are always on time with your contributions, I offer my sincere thanks; to those who are perhaps a little slow please see that your notes are on time.

THOMAS D. HOGAN,
Editor.

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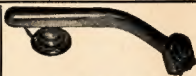


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DRIVING THE ZERO BIAS 807s

BY J. C. DUNCAN,* VK3VZ

Nowdays it is quite common to have a contact on phone and hear, "I am using 807s in zero bias as modulators OM," and find another convert to using our "Maid of all work," the 807, in a new job.

This is quite understandable, for used in zero bias, the 807 is completely tamed, and parasites are non-existent.

For those who have not got access to the original article, it may be as well to run briefly over the circuit, shown at "A" in Fig. 1.

The centre tap of the driver transformer is grounded, and the ends of the secondary windings connected to the screens of the 807s. A 20,000 ohm resistor is connected between the screen and grid as shown, and the plates of the 807s are fed to the conventional modulation transformer. The cathodes of both 807s are grounded.

With this circuit, the driver transformer was the catch, as it had to match the driver tube to the grids of the 807s which had an almost constant impedance of 14,200 ohms, grid to grid. In addition, to obtain 120 watts of audio it was necessary to use a driver which would supply 5 watts of drive to the grids; this meant a pair of 2A3s or equivalent, after allowing for transformer losses, etc.

In our applications, 120 watts is not required, and therefore the most popular arrangement has been to use a 6L6G as driver, which allows us to obtain at least 75 watts of audio, and for lower audio requirements, a 6V8 or 6F8 was adequate. Obviously then, with zero bias 807s, the harder we drive them, the more we get out, up to their limit of 120 watts, provided of course, that our plate voltage, regulation, and impedance match are correct.

Ahead of the driver, we need the usual voltage stages to lift the gain from the microphone to give a voltage which will enable the driver to operate at its correct output. With a crystal microphone, this is about two stages, or with a carbon microphone, one stage would be adequate.

So much for the circuit as originally described, and now to the circuit described in February, 1950, "CQ," shown in "B" Fig. 1.

T1 is a conventional plate-to-push-pull input transformer, such as the type used to feed a 6CS to a pair of 2A3s; in other words, an ordinary voltage transformer (most of us have a transformer of this type lying about). The centre tap of the transformer is grounded, and the ends of the secondary fed to the grids of a 6SN7, which operates as two cathode followers. The cathodes are not grounded, but are connected as shown to the 807 screens and grids.

The plates of the cathode followers are tied together, by-passed, and supplied with 300 volts. The remainder of the circuit is the same as "A."

In August, 1948, "Amateur Radio" presented the latest circuit developed by R.C.A. for using the popular 807, as a zero bias modulator. Since then the 807 has been used in this application by many Australian Amateurs.

Here is a new method of driving the zero bias 807s which simplifies the problems associated with the original circuit.

Conventional methods of producing driving power in circuit "A" Fig. 1 would involve power consumption largely cancelling the power economy advantages of the Class B operation. Such power need be supplied to each grid only on its positive half of the cycle, however, the cathode follower driver is a natural.

Note there is no connection from the 6SN7 cathodes to ground, except through the grids and screens of the 807s. Thus the plate current flowing in the 6SN7s is equal to the grid and screen current of the 807s, and varies from less than 1 Ma. to peaks of 20 Ma. with voice modulation. Actually the total current of a 6SJ7 pre-amplifier, 6SN7 two stage resistance coupled triode amplifier, and the 6SN7 cathode follower stage totals less than 10 Ma. under static conditions. Since the driver section works on about 250 volts, its plate power as well as that of the two voltage stages is obtained from the one supply.

Actually the direct-coupled cathode followers supply approximately 10 volts of positive bias with resultant total static plate current on the 807s of 30 Ma. Of course with modulation, this

plate current increases to 80 to 150 Ma., depending on the output required.

The voltage stages required ahead of T1 are important, and it is necessary to see that sufficient voltage is supplied to the primary of T1, otherwise the power output from the 807 stage will be inadequate.

It is recommended that the minimum required from a crystal microphone would be: a 6SJ7 high gain amplifier, followed by two triode sections of a 6SN7 as resistance coupled triodes. In the writer's case the voltage stages used were:—

Pre-amplifier on operating table, 6SJ7 and 6J5 to 500 ohm line. 6SN7 as two resistance coupled amplifiers, feeding T1, cathode followers and then the 807s Class B stage. From the 500 ohm line, all other stages are in the main rack of the transmitter. With this line-up, the gain control is one-fourth on for 100% plate modulation of a 50 watt power amplifier, i.e. 25 watts of audio. The meter reading the combined plate currents of the 807s varies from a resting current of 30 Ma. to about 80 Ma. on peaks, which means that for 25 watts of audio, the 807s are simply loafing along. The plate to plate impedance was 10,200 ohms, and the plate voltage 500 volts, rather poorly regulated.

With this circuit it is claimed that 60 watts of audio can be obtained, so it should be adequate for a 100 watt carrier.

The following plate to plate impedances for the 807 Class B stage are appended for readers who have not a copy of the original article.

Case	1	2	3
Plate Volts	750	600	500
Plate to Plate load	—	—	—
Output	6650	5050	4000 ohms
Max. av. anode current (two valves)	120	90	72 watts
	240	240	240 Ma.

NOTE.—If the Class B stage is run at lower plate currents or voltages, the plate to plate impedance will be different. The calculations are very simple with the following method, which is accurate enough for our requirements.

In a Class B stage at any instant the grid of one tube will be driven positive and the other tube driven past cut off, and therefore in calculating impedances we need only consider one tube. As far as the one tube is concerned the primary of the output transformer is a resistance and therefore we have this plate load (R_p) and the resistance of the Class B tube in series across the power supply. We can assume that about 80% of the power supply voltage will appear across the plate load R_p as audio voltage, so if our plate supply is 500 volts, 400 volts peak of audio will appear across the plate load R_p . This gives us our voltage for calculation.

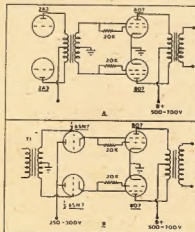


Fig. 1.

(Continued on Page 5)

* Technical Editor, 23 Parkside Avenue, Balwyn, Victoria.

SO YOU WOULD LIKE A.C.?

BY R. H. ATKINSON,* VK6WZ

Any war naturally brings in its wake movements of population and the last war was no exception. The effect the writer has observed in his own State must have been duplicated many times over in other parts of Australia, that is, Hams who pre-war lived in the City have moved to country towns, others who used to live in rural areas now have a City QTH on their cards. This is good for the country as it prevents stagnation of population—but it's not so good for the Ham who, like the writer, "cut his teeth" on a.c. mains and now finds himself cursed with d.c.

He finds himself bitterly reflecting that de-centralisation of population is something for the idealists to prattle about, but something with very obvious snags when applied in practice to Ham Radio. The town of Geraldton, W.A., has a three-wire 440 volt d.c. supply with an earthed neutral, giving (sometimes) 220 volts between the outside leg and neutral, polarity with respect to earth depending on which side of the system one's house is connected to.

You may say, "Ahl 440 volts of d.c.—no trannies, no rectifiers, a minimum of filter—what's the man beefing about?" But there's a catch to it. Pre-war, a well-known VK6, now living in the metropolitan area, resided in Geraldton and in the course of moving from one dwelling to another, had the local authorities connect the 440 volt mains up each time. The only additional accessory was one six-volt battery for heater supply, and he was set for plenty of DX.

Perhaps the municipal authorities have "had" Hams—maybe their excuse of shortages of materials is genuine—suffice it to say that none of Geraldton's post-war batch of Hams can get the 440 volt supply. And, in the case of 6EL and the writer, the two hundred and twenty stalwart volts, which leave the power house, lose from thirty to fifty-five of their brethren before reaching our shack!

6EL (who should be coaxed into speaking of his own experience at a later date!) turned to the vibratory inverter method developed by Eric Cornelius (VK6EC) and got away from d.c. mains and their snags to the extent of being able to run the rig and a c.r.o. from a.c. The writer tackled the problem from the rotary converter angle and found it not without disadvantages, but nevertheless possessed of sufficient good points to be installed permanently till such time as the Geraldton mains are changed from d.c. to a.c. some time this year.

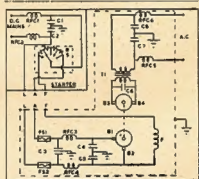
To any Ham living in a country town serviced by d.c. mains, I would sum up the position thus:—

- (1) Is there any immediate possibility of conversion of town supply to a.c.?

We Hams who complain when our A.C. Mains Voltage drops a little should feel happier with our lot, when reading this article on the problems confronting the D.C. user and the eventual solution by VK6WZ.

- (2) Have you a small backyard with no opportunities for putting up high-gain arrays?
- (3) Is battery charging expensive to you?

If you can answer "No" to all the above, then stick to d.c., put 807s in push-pull in your final and go to it. If, on the other hand, the answer is "Yes" and, additionally, you can scrounge a rotary converter (or buy one if you're affluent), then I'd suggest you manufacture your own alternating current on the premises.



Rotary Converter Circuit with Switchgear.

The rotary starter's metal frame and cover are earthed but in the above circuit the no-volt release and overload trip are not shown. Dotted lines around converter represent steel case. Motor frame is, of course, also earthed.

- C1, C2—0.1 uF, 600 volt.
- C3—Dual suppression condenser, 0.5 uF, each side of earth.
- C4, C5—2 uF, 400 volt rating.
- C6—4 uF, 600 volt rating.
- C7, C8—2 uF, 600 volt rating.
- RFC1, RFC2—125 turns of 18 s.w.g. on 2 1/2" former.
- RFC3, RFC4, RFC5, RFC6—50 turns of 18 s.w.g. on 2 1/2" former.
- R.S.—Rotary starter switch.
- FS1, FS2—10 amp. fuses.
- B1, B2—D.C. brushes.
- B3, B4—A.C. brushes.
- F1—Converter field.
- T1—Step-up transformer.

Letters L, F, and A stand for line, field and armature.

Choose as large a converter as your purse and your electric power account will stand. A small job, barely adequate for the demands of your equipment will pay off in terms of bad regulation, over-heating and kindred troubles. The bad regulation will be particularly acute when working c.w. Further, if you can, get hold of a machine made "from the frame up" for the purpose of power conversion—not a re-built electric motor.

A double-wound converter is best of all and keeps your d.c. and a.c. circuits isolated. At VK6WZ a single-wound machine is in use (not from choice) and it is necessary to use transformers between the slip rings and load for two reasons. Firstly, the a.c. voltage available is always less than the maximum d.c. voltage applied to the armature and, secondly, it is essential to isolate the load from the d.c. mains. With this machine running on d.c. mains, which measure about 170 to 185 volts, the slip ring a.c. potential is in the region of 115 to 130 volts.

Careful installation is essential if the system is to work with minimum interference to your own and neighbouring receivers. D.c. supply leads should be in earthed lead-covered cable. Plenty of filter should be applied to both d.c. and a.c. leads and the machine should be housed in a well-ventilated steel case.

If possible, get it away from the shack as far as practicable. The 6WZ converter is located on the back verandah, just outside the shack and no more than ten feet, direct line, from the receiver. Hardly an ideal set-up, but nevertheless, with the suppression employed, workable.

The writer imagines that if it were possible to install the machine in the good-shed or wash-house and bury the d.c. and a.c. leads in water pipe, the arrangement would be entirely silent in the receiver, even on 28 Mc. As it is, reception on 7 and 14 Mc. is unaffected by noise while on 28 Mc., with the noise limiter on the receiver switched in, most worth-while signals can be copied OK. Indeed, on the forty metre band, unsuppressed or partly suppressed domestic appliances in homes one hundred and more yards away make more noise than the converter, whose noise anyway is such as to make no difference to any signal, phone or c.w., which is copyable without the machine running.

Here an important point must be stressed. Standing waves on the feed system of the antenna in use for receiving, play a big part in determining whether clean or noisy reception is to be obtained.

If the antenna is a dipole or beam for the band on which one is listening and the feed line is properly matched, converter noise will be at an absolute minimum. On the other hand, if you use "just a piece of wire" for a receiving antenna, or attempt to receive 28

* 150 Fitzgerald Street, Geraldton, W.A.

Mc. signals on a 7 Mc. doublet (or vice-versa) you'll be in trouble.

Earthing naturally plays an important part in any such installation. In individual cases will, of course, call for special treatment. At 6WZ a water pipe earth is used on the power point end of the d.c. lead-covered line with a heavy 7/22 connection about 15 inches long. Out on the verandah, the end of the same lead-covered is earthed again to an adjacent water pipe about five feet distant. This earth is common to the steel case, converter frame and all mid-points on hash filters, as well as the braiding on leads to the starter-switch, etc.

It has been found necessary to earth the cover of the rotary starter switch and, indeed, the procedure of earthing, one at a time, various metal parts of the system not directly connected to either d.c. or a.c. lines proved a most interesting object lesson, checking the while with the receiver running.

The circuit diagram shows all measures adopted at 6WZ to eliminate noise and although a good deal of work was involved, the results have more than justified it. The pleasure of being able to put into service one's pre-war transformers and rectifiers and of seeing the input on 7 Mc. go up from 6 watts to nearly 35 to a single 807, and that on 28 Mc. from 3 watts to a single 807 to nearly 60, to a pair of these tubes in p.p., has more than offset the bother encountered.

A few final remarks to the novice with electric machines. If your machine is new, good and well. If it is not (as in the writer's case), give it a good overhaul before even thinking about installing it. Industrial and commercial users of these machines seldom give them the care they deserve and about a pound and a half of dirt, grease and oil had to be removed from various parts of the 6WZ machine before it could be usefully employed.

Most machines have an adjustment whereby the relative position of the d.c. brushes can be altered. You'll find that the point of minimum sparking is not only the point of least noise, but also of most efficient working. It won't be the adjustment which will give the greatest armature speed, but speed means very little in this case. Spend as much time as necessary in finding this optimum point, it's about the most important thing in the whole arrangement. See that the commutator is clean and in good condition. If necessary have it skimmed and undercut by a competent electrical tradesman. Slip rings, too, should be clean and should run true.

If you still doubt that such a machine can be effectively suppressed for radio-inductive interference, let this experience convince you. The writer, after having cleaned and adjusted the machine as outlined, had it running for a test on the kitchen floor (what Ham hasn't invaded the kitchen at some time or other?) and in the same room at that time there was a standard type of broadcast portable in operation. This receiver was placed on the lid of the converter's case and, turned with the

loop antenna in the correct direction, Perth broadcast stations (300 miles distant) were played with only a trace of background noise.

VKGGA, W.A. Sub-Editor, who has seen and heard this unit in operation, has christened it 6WZ's "baby Bunnorong" and it certainly can be stated that it has put an entirely new aspect on the Ham Radio activities of its one and only "consumer."

ACCURATE FREQUENCY TRANSMISSIONS FROM VK3WI

The next Accurate Frequency Transmission will take place on Thursday evening, 27th July, 1950, on the 7 Mc. band. Details of the operating procedure and times of operation will be found on page 12 of the January, 1950, issue of this magazine.

DRIVING THE ZERO BIAS 807s

(Continued from Page 3)

Now we want the peak current. Manufacturers' characteristics give the maximum average current for two tubes (sine wave input), so to find the peak current we divide the average current by 0.636. Therefore our peak current for case 3 in the lists above is—

$$\frac{240 \text{ Ma.}}{0.636} = 377 \text{ Ma.} = 0.377 \text{ Amp.}$$

Then from $R = E + I$ we have—
 $\frac{400}{0.377} = 1061 \text{ ohms for one tube.}$

The plate to plate load for two tubes will be four times this value or 4244 ohms, which is very close to the manufacturers' ratings (Case 3).

The audio output can be found by the simple formula $W = \frac{I \times E}{2}$ and working on peak values found we have
 $\frac{0.377 \times 400}{2} = 75 \text{ watts output.}$

Below is the case of Class B 807s to give 100% modulation of a 50 watt carrier (25 watts of audio). Example—

Supply voltage 500 volts.

Av. plate current (two tubes) = 100 Ma. = 0.1 Amp.

$$\text{Then } E \text{ peak} = \frac{500 \times 80}{1 \times 100} = 400 \text{ volts}$$

(i.e. 80% of supply voltage).

$$\text{Peak current } I_p = \frac{0.1}{0.636} = 0.152 \text{ Amp.}$$

$$\text{Plate impedance (one tube)} = \frac{E_p}{I_p} = \frac{400}{0.152} = 2630 \text{ ohms.}$$

$$\text{Then plate to plate impedance} = 2630 \times 4 = 10,520 \text{ ohms,}$$

$$\text{and audio output} = \frac{I_p \times E_p}{2} =$$

$$\frac{0.152 \times 400}{2} = 30.4 \text{ watts.}$$

CW-Phone Monitor

BY W. L. HEINRICH,* VK5HR

This is a simple monitor which is used at VK5HR for both phone and c.w.

The audio oscillator is quite straightforward, although some variation of resistor and condenser values might be necessary in order to suit varying types of audio transformers and individual tastes as to pitch.

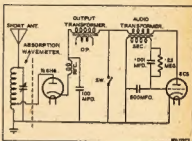


Fig. 1.

The rectifier circuit is also conventional and may be varied to include an overmodulation indicator or a percentage modulation meter.

The circuit shown in Fig. 2 may be connected directly across the existing link between p.a. and aerial coupler of any transmitter without causing any unbalance. It is best suited, however, for low power equipment when used in this manner.

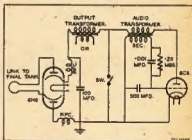


Fig. 2.

The writer's monitor draws less than 0.5 milliamp with a voltage of approximately 3 volts on the plate of the audio oscillator, so power taken from transmitter is very slight.

The purpose of the switch is quite obvious. It simply short-circuits the audio oscillator, thus allowing the monitor to be used for phone.

Output of the monitor may be wired via a relay to the output of the receiver or it can be connected to a change-over switch.

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A CASCODE CONVERTER FOR 50 Mc.

BY DR. ALEX TAYLOR,* VK3AT

This is the circuit of a low noise level converter for 50 Mc. use, using disposal type valves and parts throughout.

The i.f. used is 2 Mc., the i.f. transformer being a 1,600 Kc. one with the iron slug well out of the coils.

The r.f. stage uses a 6SH7 connected as a triode with shunt neutralisation, the second r.f. stage being a grounded grid amplifier, in this case an EF50 with a bias resistor of 120 ohms. The screen and suppressor grids of the EF50 are connected to the plate, and the control grid is grounded. As usual, a shield is run across the bottom of the EF50 socket.

Capacity coupling is used between the first and second r.f. stages and it is found that the coil L4 is extremely uncritical, 10 turns of 16 gauge enamel wire is used, although 8 and 16 turns all seem equally effective.

The mixer is another 6SH7 used as a pentode with control grid injection of oscillator voltage and grid leak bias.

The high frequency oscillator is another 6SH7 using the "Clapp" or "Steco" circuit and although the values of fixed condensers in the circuit are smaller than in the lower frequency versions of this oscillator, it is very stable and c.w. signals on 50 Mc. can be tuned in with ease.

The grid circuit of the oscillator tunes the range from 26 to 28 Mc. and the second harmonic (range 52 to 56 Mc.) is picked off from the plate of the valve.

The oscillator only is tuned in this converter. The first tuned circuit is broad, the second between first and second r.f. stages is very broad, and the mixer coil has a very sharp resonance point. An iron slug is used to tune this coil and when the point of resonance at

50 Mc. is found, the circuit is broad banded by shunting the coil with a resistance of 3,300 ohms, which seems to give a band-width of over 4 Mc. A resistor of 10,000 ohms gave a band-width of 1.5 Mc. approximately, but no apparent increase in sensitivity of the converter.

ALIGNMENT OF THE CONVERTER

The mixer output coil is first resonated to 2 Mc. by adjusting its iron core until maximum noise is heard at 2 Mc. in the receiver used as i.f. channel. The oscillator tuning range is adjusted first and by listening for it on a ten metre receiver, then, with the tuning condenser out of mesh fully, the padding air trimmer is set so that the signal falls on 28 Mc.

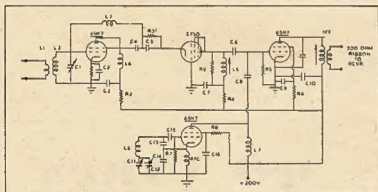
All that remains is to align the mixer and first r.f. coils. An absorption wave meter is handy here. To ensure that is aligning the stages on the range 50-54 Mc. and not on the image.

Final adjustment is best made by listening to 50 Mc. signals and adjusting for maximum signal.

It will be found that the first tuned circuit is broadly resonant and the noise output of the converter seems to drop at resonance in this circuit.

The neutralising coil, L3, consists of 47 turns 22 gauge d.c. wire on a $\frac{1}{2}$ " former and requires no adjustment. One can play around with L4 for hours without improving matters. L5, the mixer coil, however, shows a sharp resonance point and can be broad banded as mentioned previously.

The conventional cascode converter uses a 6AK5 1st r.f. converted as a triode, and a 6J6 as grounded grid stage.



Cathode resistor of 1st r.f. stage (6SH7) is 120 ohms.

- C1, C12—3-30 pF. air trimmers.
- C2, C3, C5, C7, C9, C16—0.001 to 0.004 μ F., mica.
- C4, C6, C15—50 pF.
- C8—7 pF. ceramic.
- C13, C14—200 pF.
- C10—0.01 μ F., paper.
- C11—25 pF. variable.
- R1, R3—120 ohms.
- R2, R4, R6—decoupling resistors, any value, 1,000 to 10,000 ohms.
- R5—1 megohm.
- R7—100,000 ohms.
- R8—10,000 ohms.
- R9—3,300 ohms.
- L1—3 turns closely coupled to L2.
- L2—4 turns $\frac{1}{8}$ " copper tubing 1" diam.
- L3, L7—47 turns 22 gauge DCC $\frac{1}{2}$ " diam.
- L4—10 turns 16 g. enamel $\frac{1}{8}$ " diam.
- L5—6 turns 16 g. enamel $\frac{1}{8}$ " diam, iron dust core.
- L6—10 turns 16 g. enamel $\frac{1}{8}$ " diam. on ceramic former, winding length 2".

* 108 Maude Street, Shepparton, Vic.

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These would be an improvement, but were not available at the time of construction of this converter and in any case the writer wished to use up some of the many 6SH7s in an I.F.F. Unit.

The 6SH7 is, however, not suitable in a grounded grid circuit as the suppressor grid is connected internally to the cathode, thus ruining any shielding brought about by grounding the grid of the valve.

There are special valves for grounded grid operation and when I can obtain one, results, whether better or worse, will be reported in this journal.

The choice of 2 Mc. as i.f. was made for the following reasons:

1. The same oscillator and same tuning range are to be used in building a ten metre converter with 2 Mc. i.f. on the same chassis as this one.
2. Better conversion gain in the mixer stage is obtained by using a low frequency 2 Mc. i.f. than when using a high i.f. such as 10 Mc.
3. Images are 14 Mc. away and image interference from Amateur Stations is not experienced. Interference from strong local ten metre stations may occur, but is not a problem in this provincial city.

As in all v.h.f. receivers, lead lengths are short and point to point wiring and mounting of components is the most efficient.

The neutralising coil L3 is connected directly from the control grid pin of the first valve socket to junction of C4 and C5.

There is a small fixed condenser in the i.f. transformer connected across the

primary, this was removed and mounted on the socket of the mixer valve directly between plate and cathode. The values of C13 and C14 were arrived at by guess work and some experimentation here, if time were not so precious, would be advantageous.

L6 is wound on a 1" ribbed ceramic former, and the turns cemented in place with "Tarzan's Grip."

Earth leads and leads to C11 are rigid, 1/4" copper tubing being used here.

All coils in this converter are mounted underneath the chassis except L1 and L2 and also the 2 Mc. I.F.T. to avoid heat radiation from the valves.

A FEW HELPFUL IDEAS

When using a 6J6 as a mixer-oscillator or as a Clapp oscillator-buffer amplifier, use for the oscillator the triode section with plate pin No. 1 and grid pin No. 6. The other triode section (plate pin No. 2 and grid pin No. 5) has the getter assembly attached to the plate and is more subject to drift and microphonic troubles.—VK3AKZ.

Suitable springs to replace those in drill chucks can be obtained from old motor tyre valves.—VK2AC.

When carrying a multimeter, turn the selector switch to a high current range. The low resistance shunt across the meter is as good as shorting the leads together for heavily damping the meter and helping prevent bent needles and jarred movement.—VK3AKZ.



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Western N.S.W. Emergency Work

For a period of seven days from 4th to 11th April, Amateurs in the Forbes and Dubbo areas in N.S.W. were active in assisting the various authorities by supplying communication channels when other means failed. Without a doubt in the last two years Amateurs have had opportunities to assist in many disasters and they have grasped these opportunities on every occasion to demonstrate the emergency value of Amateur Radio.

The main portion of the work on this occasion was in co-operation with the Army who had a number of Army "Ducks" effecting relief in the area. During the whole operation approximately 400 messages were handled by Amateur Stations on behalf of the various authorities.

On the arrival of the "Ducks" in Forbes, a station was set up at the Town Hall to communicate with Army HQ. This station, manned by the Army, was also to be used for radio control of the "Ducks." On the morning of 4th April, Bill Kennedy, VK2BT, phoned Hugh Stitt, VK2WH, to say that the Army was having difficulty in contacting HQ and could he help? VK2WH then opened up on the 7 Mc. band and requested permission from official P.M.G. Station, VK2AA, to operate on 3830 Kc., the Army's frequency.

The town of Forbes itself was divided into three portions and the "Ducks" were busy in their rescue work in isolated areas, and communication with the "Ducks" was extremely important. Permission was granted and VK2WH's main transmitter was then tuned to 3830 Kc. and remained there for a period of seven days. A No. 11 battery-operated was used on the 7 Mc. band. The main transmitter was used as a link between the Army control station in Forbes and Headquarters and was also used to communicate with the "Ducks" when they were 70 miles away from Forbes.

Bill Kennedy, VK2BT, and John Marr, VK2AMV, in Forbes proper, were also active on both 3.83 and 7 Mc., and later in the operation the three stations worked shifts on the Army frequency of 3830 Kc. A 50 Mc. link between all three stations was in operation and afforded them a channel on which they could communicate without interference on either 3.8 or 7 Mc.

Quite an amount of traffic was also handled on the 7 Mc. band and VK2AA, official station, kept a continuous watch on the Emergency Frequency of 7002 Kc. and gave the Amateurs active every assistance.

The New Zealand 3.5 Mc. band extends to 4 Mc. and considerable trouble was experienced during the evenings with interference from ZL stations. After a message from VK2NS, requesting clearing of the frequency and the appearance of official monitoring station ZL3JT, on the following evening, 3830 Kc. was kept clear of interference.

Most of the emergency work was done on telephony and it was fortunate that stations participating were able to use

their main home transmitters. At one stage when the power failed at VK2WH, a request to VK2BT obtained a quick repair. It was typical of the co-operation afforded the Amateurs in their work. Many of the local people listened to the emergency working on 3.8 and 7 Mc. bands and in one case, a message concerning the feeding of some marooned stock was intercepted, and the stock fed before the message finally reached its destination. BCI was even forgotten in the desires of the local people to follow the story.

Later in the operation, two "Ducks" proceeded to the Warren area and after a call on the 7 Mc. band, VK2XP, of Dubbo, was asked to look after them, as it turned out Bob Bensley had been following them for two days and had the position in hand. Bob continued to solve the communication problems of the "Ducks" until the floods had subsided and they were no longer required.

CERTIFICATE OF SERVICE

It was pleasing to see Chas Feddell, VK2KN, as the recipient of a Certificate of Service from the N.S.W. Police Department, for his sterling emergency work during the Kempsey flood disaster last year. His assistant, Mervyn Harrison, also of D.C.A., received a certificate too. They were presented at the June meeting of the N.S.W. Division of the W.I.A.

Several interesting points were learnt from the operation and they could prove valuable for future emergency working of Australian stations.

The first concerned the polarisation of the signals and it was found that reception of the Army "Ducks," using vertical whip antennae, was extremely difficult using the normal horizontal half wave doublet. On changing to a vertical antenna, the signals from the "Ducks" rose a number of points. VK2WH used the vertical for working to the "Ducks" and the horizontal for communicating with HQ.

During the first days of the operation Amateur Stations were active up to 17 hours per day. Working for such long periods gave a good insight into the conditions prevailing on 3.8 Mc. and it was shown that the band each day at 1130 hours became practically useless and that a frequency about 6 or 7 Mc. should be available for use when this condition prevailed.

Conclusions could be drawn that a considerable amount of emergency work with mobile equipment could be done in the 3.5 Mc. band during daylight hours, but such gear should also cover the 7 Mc. band.

(Continued on Page 10)

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

JULY, 1950

Nine of the charts, prefixed by the letter "C" for Canberra, refer to forecasts for the South-Eastern Australian States. The remainder, prefixed by the letter "P" for Perth, are for Western Australia.

The Canberra charts refer to the following world zones:—

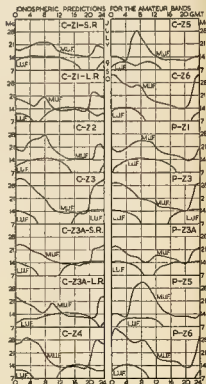
Zone	Region	Terminal
1	Western Europe	London
2	Mediterranean	Cairo
3	N-West America	San Francisco
3a	N-East America	New York
4	Central America	Barbados
5	South Africa	Johannesburg
6	Far East	Manila

QUIZ

The Prediction Service welcomes comments on the accuracy of its predictions. In particular, answers to the following questions on the Canberra-San Francisco circuit would be useful:—

1. Were good conditions experienced on 7 Mc. for the period 0600 to 1500 hours G.M.T.
2. Was the 14 Mc. band workable between 1000 and 1800 hours G.M.T.?
3. Was the 28 Mc. band workable for several hours around midnight G.M.T.?

Answers to the Quiz should be sent to the W.I.A. and should, if possible, refer to consistent results obtained on the majority of days in the months.



VK-ZL INTERNATIONAL DX CONTEST, 1950

In announcing the rules for the 1950 VK-ZL International DX Contest, the New Zealand Association of Radio Transmitters, with the Wireless Institute of Australia, invite the participation of members to ensure the continued success of this Contest.

OBJECTS.—For the world to contact VK and ZL stations and vice versa.

WHEN.—
 1201 G.M.T., 22nd Sept. to } C.W.
 1159 G.M.T., 24th Sept. }
 1201 G.M.T., 29th Sept. to } Phone
 1159 G.M.T., 1st October }
 1201 G.M.T., 6th October to } C.W.
 1159 G.M.T., 8th October }
 1201 G.M.T., 13th October to } Phone
 1159 G.M.T., 15th October }

DURATION.—(a) VK and ZL stations for contest purposes will limit their period of operation to any consecutive 24-hour period on each week-end within the times given above. Once an operator commences operation, the operator will not exceed 24 hours of consecutive operation reckoned from such commencing time.

(b) In other countries, stations may contact VK and ZL stations at any time within the periods shown above.

RULES

1. There shall be three main sections to the Contest.

- Transmitting c.w.
- Transmitting phone.
- Receiving (phone and c.w.).

2. The contest is open to all licenced transmitting stations in any part of the world. No prior entry need be made. Mobile marine stations or other non-land based stations are not permitted to enter the contest.

3. All Amateur frequency bands may be used.

4. Phone will be used for the first and third week-ends, and phone for the second and fourth week-ends. Stations entering for both phone and c.w. sections must submit separate logs for each.

5. Only one contact per band per week-end with any one station (for contest purposes) is permitted.

6. Only one licenced Amateur is permitted to operate any one station under the owner's call sign. Should two or more operators operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign.

7. Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of 5 or 6 figures will be made up of the RS (telephony) or RST (telegraphy) reports plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact. E.g., if the number chosen for the first contact is 053, then for the second contact the number must be 054, for the third 055 and so on. If any contestant reaches 999, he will then start from 001 and continue.

8. **SCORING.**—Fifteen points will be scored for the first contact on a specific band with any overseas country (VK-ZL district for overseas stations), fourteen points will be scored for the second contact on the same band with the same country (VK-ZL district), thirteen for the third and so on to the fifteenth contact which will score one point. All contacts with that particular country (VK-ZL district) on that band will thereafter count one point each. This scoring procedure will be repeated on each band to encourage multi-band operation. There will be no VK-ZL contacts between each other. A.R.R.L. official countries list will be used. VK-ZL districts are VKs 1, 2, 3, 4, 5, 6, 7, 9, and ZLs 1, 2, 3, 4.

9. **LOGS.**—(a) Logs must show in this order:—Date, time in G.M.T., band of operation, call sign of station contacted, serial number sent, serial number received, points claimed.

(b) A separate log must be submitted for each band. For each band an analysis sheet must be given showing:—list of countries (VK-ZL districts) contacted with number of contacts and points claimed for each country (VK-ZL district) contacted.

(c) A summary sheet to show:—(1) station call sign, (2) name and address of the operator, (3) whether phone or c.w., (4) points claimed for each band, (5) grand total of points, (6) brief description of transmitter, tubes, power, antenna, etc.

(d) A declaration that all contest rules and regulations for Amateur Radio in your country have been observed and that the log is correct and true to the best of your belief.

10. The judges reserve the right to disqualify any station for (a) consistent tone reports under T8, (b) continuing key clicks, (c) phone splatter and/or overmodulation, (d) off frequency operation.

11. The ruling of the Executive Council of N.Z.A.R.T. will be final in the event of any dispute.

12. Overseas stations should call CQ VK-ZL and VK-ZL stations CQ Test.

13. **AWARDS.**—Attractive certificates will be awarded to the station returning the highest score from each particular country and each call area in the U.S.A. Additional certificates may be issued at the discretion of the Contest Committee. There will be no world winner. VK and ZL awards will be announced by the W.I.A. and N.Z.A.R.T. respectively.

14. Entries from overseas stations should be plainly marked on the wrapper, "VK-ZL TEST," and forwarded to reach N.Z.A.R.T., Box 469, Wellington, N.Z., by 14th January, 1951. Logs from ZL stations should reach the same address by 24th November, 1950, while VK logs should be sent to their respective Divisions by 24th November, 1950.

RECEIVING SECTION

1. The rules for the Receiving Contest are the same as for the Transmitting Contest, but is open to all members of

any Short Wave Listeners' Society in the world. No transmitting station is permitted to enter for the receiving contest too.

2. The contest times and the logging of stations once on each band per week-end are subject to the same rules as for the transmitting contest except that VK and ZL listeners may listen and log stations over the whole period of the contest. Logs will be in the same form as for the transmitting contest.

3. To count for points, the call sign of the station being called, the strength and tone of the calling station, together with the serial numbers sent by the calling station must be entered in the log. Points will be claimed on the same scale as for transmitting stations.

4. It is not sufficient to log a station calling CQ Test.

5. VK receiving stations cannot log VK stations, and ZL receiving stations cannot log ZL stations, but VKs may log ZLs and vice versa. Overseas stations will log only VK and ZL stations heard operating in the Contest.

6. Certificates will be awarded as in the transmitting contest.

N.S.W. EMERGENCY WORK

(Continued from Page 9)

Local authorities and Amateur Stations co-operated fully in the operation. Of the latter, VK2GS, VK2WV operated by VK2VW, and VK2AMR, not forgetting the many other stations active, were of great assistance acting as guard stations and calling other areas.

The wives of the Amateurs, even with their own worries, assisted often to ease the burden. Mrs. Marr, wife of VK2AMR, for instance, for a number of days ran a receiver on 3630 Kc. and relayed any messages necessary to John. Both VK2BT and VK2AMR had their own personal flood problems early in the operation, but when the normal business of the town was suspended, they operated their stations full time.

VK2WH was isolated very early in the emergency and from then on was nearly full time in the shack, he has been flooded three times since Xmas and is getting a little tired of it all.

The sum total of Amateur Radio activity meant that food relief to the citizens and stock was expedited, as was rescue work and with it goes up another mark on the credit side for Amateur Radio.

Not long ago we read complacently of the emergency work of the American Amateur and with the rider that "it couldn't happen here," passed the matter of emergency organisation by. It has happened here—in precise, eight times in the last eighteen months—so let us organise that we best perform a function of our hobby, that of supplying communication to those in distress.

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Abstracts from Overseas Magazines

R.G.B.G. "BULLETIN," OCTOBER, 1949

P. 104: "An All-Band Crystal Calibrator." W. H. Alden, G3UJ—One Mc. crystal oscillator, 100 and 10 Mc. multivibrators, harmonic amplifier and cathode follower to low impedance output. Operates on 100 kc. up to 75 Mc. and 100 Mc. points up to 150 Mc.

P. 108: "Simple C.W. Phone Monitor."—For a c.w. audio oscillator whose b.f. is obtained by rectifying a small portion of the r.f. output of the transmitter. On phone, acts as a diode rectifier.

P. 107: "Simple Breaks Systems." J. P. Hawker, G3VA.—Survey of proven systems. Full of information for the interested in working breaks.

P. 110: "Instant Heating Soldering Iron." J. Gilbert, G3DDO—BUT consists of loop of 19 gauge copper wire which is heated by passing 100 amps directly through it. This current (at 240 v. a.c.) is supplied by a small home-made transformer, built into the iron which is in the form of a pistol.

P. 111: "Carbon Microphones." G. B. Brewer, G4LD—Advantages of modern carbon mikes.

P. 112: "Can Deviations Affecting the Accuracy of Measurements?" J. B. Harris—General discussion on traps for young players.

P. 118: "The R.G.B.G. 420 Mc. Tests."—Full details of field day with details of all rigs used.

"SHORT WAVE NEWS," JANUARY, 1950

P. 8: "A 420 Mc. Superregen. Receiver." J. Taylor—RU18 in quarter wave circuit tuned by butterfly condenser.

R.G.B.G. "BULLETIN," JANUARY, 1950

P. 214: "A Table Top Transmitter for the DX Bands."—Compact 8 stage rig for 14, 21 and 28 Mc. Final is parallel 807s.

P. 216: "8 Meter Operation with Delayed A.V.C."—Cleaning the Dist.—Adds an EA55 as an undelayed rectifier.

P. 217: "Simple Sideband Transmission Applied to Telephony, Part II." A. R. Hyde, G4ZBH—Details of phase shift transmitter and a balanced frequency converter for the receiver.

P. 223: "Automatic Change Over." V. F. Jeffries, G4BHD—Heart of the system is a large π -network which is charged on keying and discharges through a sensitive relay. This will hold the relay shut for a 14 seconds' break after which the relay opens and changes circuit to receive.

P. 226: "Bright Ideas!" L. M. Gummel, G6HR—(i) Home-made 818 heater; (ii) An oscilloscope power supply; (iii) Burnt out r.f. ammeters as milliammeters.

"HAM TIPS," JANUARY-MARCH, 1950

P. 1: "A Simple Code Practice Unit for the Novice." E. Bucklin, W5QDP—1AG5T in Hartley circuit using push-pull audio transformer.

P. 1: "Electronic Keying Systems." M. Seybold, W4WVY—Gives seven circuits which have been tried at various times. Latest circuit is for screen keying using a V.U. tube in series with the screen supply as the essential on-off element together with a control tube to raise and lower the voltage across the V.U. tube in conduction or not.

P. 4: "Simple Over Modulation Indicator." G. Hanchett, W5YH—1B3GT as negative peak rectifier which flashes a neon when it conducts. The indicator takes a V.U. tube in series with the screen current to the r.f. final. Suggests using 3V4 diode connected in place of 1B3GT if b.f. is less than 600.

"SHORT WAVE MAGAZINE," FEBRUARY, 1950

P. 888: "Wide Range Heterodyne Frequency Meter." F. Butler—Three valve circuit. Electron coupled v.f.o., 50 Kc. crystal calibrator.

P. 902: "Self-Contained QRP Portable Transmitter." A. E. Newport, G8DGL—40 mW. dry battery 1.5 f. receiver and c.w. transmitter.

P. 907: "H.T. Without Transformers."—Methods of obtaining h.v. and filament supply direct from a.c. mains. Not to be recommended.

P. 911: "G.P. Crystal Oscillator." J. H. Jowett, G3CFV, and P. J. Towgood—Pierce crystal oscillator generating marker harmonics on feeding frequency and frequency of crystals whilst grinding.

P. 913: "G.P.T. Phone Monitor." J. A. Plowman, G4JW—Simple c.w. phone monitor in a vacuum tube.

P. 920: "Testing the S.S.B. Transmitter." H. C. Woodward, G2XN—Adjustment and setting up of crystal filter type s.s.b. transmitter.

P. 921: "Another Top Band V.I." G. T. Alderson, G2OZ.

P. 937: "Parallel-Pad Modulator." D. E. Pasfield, G5BNH—Saturation of modulation Transmitter by p.a. current by using an additional modulation stage.

"SHORT WAVE NEWS," FEBRUARY, 1950

P. 32: "A Two Valve Receiver for 145 Mc." M. R. Tungate, G8ZLE—D002 superregen detector, 6C6 audio.

P. 35: "Sevens Centimeter." Part I: Major Cycle—Introduction and methods of frequency measurement.

R.G.B.G. "BULLETIN," FEBRUARY, 1950

P. 254: "A 6K8 Low Power Transmitter." J. L. Rought, ZL3UT—6K8 triode section as 1.75 Mc. v.f.o. electron coupled internally to hexode section which doubles to 3.5 Mc. Five watts input to hexode without ill effects.

P. 258: "Communications Receiver Design." D. Heighman, G6DE—The best article seen for some time discussing just what is necessary in a communications receiver. If you are going to build a receiver, then read this article first. This description of the development of the Denon DCR19 is full of both general and detailed ideas.

P. 259: "An Electronic Keyer." R. Brundum, Nielson, G2ZBO—Although not completely electronic, as it uses two relays, this device for producing automatic dots and dashes appears simpler and easier to get going than the usual ones on this subject.

P. 261: "In the Workshop." "Donex."—The technique of soldering.

P. 263: "Bright Ideas."—(i) Stabilising the 618 by inductive neutralisation, (ii) Improving selectivity with out-tuned I.L. stages.

"QST," MARCH, 1950

P. 11: "A Beginner's Four-Tube Superhet Receiver." D. R. Mix, W1T5—535T converter, 830T 1500 Kc. if stage, 6SQ7 detector and b.f., 6SR7 audio. Oscillator covers 6 to 5.6 Mc. Arrial circuit can tune either 1800 Kc. above or below oscillator, thus covering 60 and 40 metres with good band-spread but without changing coils. Also the second harmonic from the oscillator gives two more bands by retuning the mixer circuit.

P. 14: "Incandescent Light Flicker." R. E. Sank, W3CEY—How to get over the lights blinking when high power is keying.

P. 15: "Eliminating TV with Low Pass Filters." Part II, G. Grammer, W1DF.

P. 18: "Crystal Controlled Oscillators." C. V. Chambers, W1JZQ—Results of lots of tests on 6AG7, 6V6, 6V6GT and 6L6 in triode, grid plate, and modified Pierce circuits. Found that: (i) Screen voltage modulation is essential for good keying; (ii) The 6AG7 is by far the best tube type from every stand point; (iii) The triode gives the most output with 6AG7 in Pierce circuit second; (iv) Modified Pierce circuit is easiest on crystals with grid plate; (v) Unless a 6AG7 is used, it is not advisable to tune any oscillator for maximum output because a slight change in circuit conditions may cause frequency shift; (vi) Plate circuit keying gives less chirp than cathode keying.

P. 24: "A Two Tube Transmitter." E. Tilton, W1HQD—Part II. Transmitter 20 24 Mc. oscillator-doubler, 6A6 tripler, pair of 6J6s push-pull parallel final p.a.

P. 46: "Clamp Tube Modulation." R. Goodman, W1DX—How to try screen modulation of p.a. final using a clamp protection tube. Very suitable for 807s.

P. 50: "Adjusting Antenna Coupling in VHF Receivers." H. H. Cross, W1OOP—Adjusting for lower noise figure and noise generator.

P. 52: "Hints and Kinks."—(i) Two improvements in clamping elements to local in all metal plates; (ii) Simplified LC calculations; (iii) Code Practice Oscillator; (iv) Soldering tips; (v) Preservation for wooden masts; (vi) Direct reading dial for the HRO.

P. 54: "TV Noise." G. Grammer, W1DF—1354 used as a simple v.f. mixer with a grid dip oscillator as local oscillator and communications receiver tuned to it. Serves as a simple yet accurate receiver.

P. 60: "The World Above 50 Mc."—(i) Automatic band scanning gadget used by W2ZHH; (ii) On tripling to 420 Mc., which tubes will, which won't.

"QST," APRIL, 1950

P. 11: "A Constant Modulation Phone System." G. R. Lippert, W5YH—The p.a. is screen modulated in the usual manner except it there is no d.c. voltage on the screen. Instead, portion of the modulator output is rectified and used for the screen supply voltage. Thus the screen voltage increases and decreases with the average speech level, maintaining a high percentage modulation. The low screen current in the r.f. final should be useful for portable work.

P. 14: "A Two Stage Transmitter for the Beginner." D. R. Mix, W1T5—It really needs an expert to design a simple beginner-proof (sans mixer) Here is one designed by one, 6AG7 c.w. driving 6L6 or 6V6 p.a. Gives suitable aerial.

P. 19: "Coupling Unbalanced to Balanced Lines." C. T. Laley, W3OCC—LC networks for coupling say 300 ohm twin lead to 75 ohm c.c.-ex. These

networks are broad enough to cover an Amateur band.

P. 22: "Welding Aluminium with a Blow Torch." H. H. Wauson, W3MTE.

P. 23: "Eliminating TV with Low Pass Filters." Part III, G. Grammer, W1DF.

P. 34: "Key Clicks and Receiver Bandwidths." R. Goodman, W1DX—Methods of eliminating key clicks and how they are affected by bandwidth.

P. 42: "A Two Metre Station for the Novice." Part III, E. P. Tilton, W1HQD—Modulation, power supply and control unit.

P. 48: "50 Years of Progress. A Report on an Amateur Radio." Larson E. Rapp, W1OT—This noted author's usual 1st April offering.

P. 58: "A High Frequency Crystal Filter." A. P. Lauer, W3BKS—Between crystal and 5 Mc. receiver, a 8 Mc. crystal filter is used. Circuit similar to standard i.f. crystal filters.

P. 64: "Hints and Kinks."—(i) Something new in tuning devices for coupling c.c.-ex. to b.o. (ii) Perque protection for rotary beam antennas.

(iii) "Clamper" tube troubles.

P. 77: How to get single sideband excited carrier reception of a.m. signals using the crystal filter and b.f.o. already in your receiver. An interesting idea.

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50 Mc. AND ABOVE

Compiled by J. K. Ridgway, VK3CR

There is a severe shortage of news of v.h.f. during this month due undoubtedly to an equally severe lack of activity on the bands.

The only DX item of interest concerns a short opening from VK3 to VK4 on Sunday, 11th June, from 2300 hours to 2400 hours when VK4 3BR, VK4 3CQ, VK4 3CZ and VK4 3CZG, signals were not the best, peaking to 57 at times with plenty of QSB. It is understood that VK4s also worked VK2s on the same date, but no report is to hand at the time of writing.

VICTORIA

Due to the cold weather, activity on this band has been on a somewhat reduced scale this month. A new station is 3JZ of Parkdale, who is putting out a good signal from a single 807 with 50 watts and a 3 element beam. 3JZ has returned to the band after a long absence and is doing well with 80 watts on 81° and a 3 element wave beam. DX has been pretty much non-existent, a few VKs were very weakly on the 27th of May, but no contacts were made. It is hoped that with the coming of the milder weather, a peak there will be a few openings and some intermediate contacts. Inverurie 4110 has announced that 3JQ calls CQ on 1400 and 1600 most days.

WESTERN AUSTRALIA

A new signal has been reported on six metres this month, that of 8HW Fremantle. Harry's transmission was heard in Bendigo by 6RO. However, it is believed that 8HW is now sending another sig for six and we hope it won't be long before you become one of the "regulars" on the band Harry. It might be mentioned that any new signal is welcome on six. There is plenty of room for everyone and this band is ideal for cross town QSOs.

Nothing elaborate is really needed to get on six, and high power is certainly not necessary. 8HW can stand for it at moments I think Harry's 5 watt rig and future dig is putting out quite a respectable signal. It will eventually be a mobile affair for his and six. When the rig is in the car can be completed.

Of the country stations on six, 6G3 and 6DN are still the most consistent signals. Late Perth contact can nearly always be made on six, and sometimes conditions peak sufficiently to allow phone to be used.

8AS is using a new converter (ex-VK3U1) and results obtained are very satisfactory indeed. The converter uses a T74 20 and 615 valve oscillator with output on 7 Mc. 8HB is now putting out a very solid signal on six metres and apparently has that grid drive problem behind. New work level.

Station active on six at present are as follows: 6RO, 6FO, 6RK, 6GO, 6FR, 6HR, 6HL, 6DO, 6AN, 6DW, 6GO, 6GS and 6EC. Don't forget the weekly run-up on Monday evening fellows.

VICTORIA 144 Mc. NOTINGS

This band has been quiet for the same reasons as 50 Mc., although the regulars have maintained skeleton activity on the band. New stations are 8ATH using 823 gear and 8ADU, using push pull 7193 as a carrier oscillator. 8ADU at Werriangi, 80 miles east of Melbourne has arrived on the band using 50 watts in an 816 and a 3 element wave beam, and will provide the Western group with some DX contacts. 8AKM, of the same town, is also getting very ready for the band and should be performing well.

8TH has been operating from his portable location near Yallourn most Sunday afternoons and has been providing some interesting contacts with Melbourne stations. Night work a great deal better, strong and steady on some occasions and weak and fading badly on others.

IMPORTANT

Would all Magazine Contributors please note that all contributions must be addressed to "Law Court Chambers," 191 Queen St., Melbourne, and NOT to the old box number.

Contributions, particularly notes, if addressed to the box number may not be received in sufficient time to be included in Magazine for the month for which they are intended.

200 Mc. WORK IN WESTERN AUSTRALIA

6PC and 6BO have been doing some very fair work on 200 Mc. and report terrific signals between Cottesloe and Beaudenham (about 18 miles). 6PC (Frank) is using a pair of 6V6s and a four element parabolic array, whilst 6RO (Rolo) uses a pair of 7193s and a four over four beam.

No news from the 144 Mc. gang, but will hope to have some news of this band for inclusion in next month's notes.

200 AND 576 Mc. ACTIVITY IN VICTORIA

8ARY, 8ATP, 8ADU, and 8ED, all of Bendigo, are active on 200 Mc., using modulated oscillators and expensive antennas and are getting good signals over the short distances involved.

On 576 Mc. the only two active appear to be 3AS and 3GO, who have been doing a great deal of experimental work with antennas and are getting good signals over this four mile non line of sight path. New blood or renewed activity from old would be appreciated.

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- Belling Lee type L1033/C4 twin cartridge fuse holders. Takes standard car type cartridge fuses .. 9/5
- Belling Lee type L1045/C3 single cartridge fuse holders. Takes standard car type cartridge fuses .. 6/9
- Belling Lee type L356 panel mounting cartridge fuse holders .. 5/4
- Belling Lee type L575 miniature of above .. 3/1
- Belling Lee type L580 "Carod" stainless steel car aerial .. 39/6
- Belling Lee Co-Axial Cable Connectors:—
- Type L604/S chassis mounting female .. 3/3
- Type L642/P to fit L604/S .. 2/7
- Type L1286 chassis mounting male .. 6/9
- Type L1250 female to fit L1286 .. 8/6
- Type L1287 chassis mounting female .. 8/6
- Type L1250 female cable extension .. 5/9
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- Metro-Vickers 0-20 volt DC 200 ohm/volt 2" square meters .. 19/6
- Amphenol Seattle 5-pin valve sockets .. 3/6
- American Tung-Sol 6AK5 tubes .. 18/6
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WI BROADCASTS

All Amateurs are urged to keep three frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WU—Sundays, 1100 hours EST, 7196 Kc. and 2000 hours EST, 504 Mc. No frequency checks available from (VK2WU) Intra-State working frequency, 7176 Kc.

VK3WU—Sundays, 1120 hours EST, simultaneously on 5590 and 7196 Kc. and re-broadcast on 50 and 144 Mc. bands. Intra-State working frequency, 7185 Kc. Individual frequency checks of Amateur Stations given when VK3WU is on the air.

VK4WU—Sundays, 0900 hours E.S.T. simultaneously on 3788 Kc., 7196 Kc., 14848 Kc., 18.4 Mc. and 144.235 Mc. Frequency checks are given two nights weekly, and the times are announced during Sunday broadcasts. 7195 Kc. channel is closed from 1900 to 1920 hours each Sunday as VK4 query service to VK4WU.

VK5WU—Sundays, 1000 hours SAST, on 7196 Kc. Frequency checks are given by VK5WU by arrangement only on the 7 and 14 Mc. bands.

VK6WU—Sundays, 0900 hours WAST, on 7196 Kc. No frequency checks available.

VK7WU—Second and Fourth Sundays at 1000 hours E.S.T. on 7196 Kc. No frequency checks are available.

STANDARD FREQUENCY SERVICE

A Standard Frequency Service similar to that in operation by WWV in Washington, D.C., and by WWVH in Honolulu is now being operated by the National Physics Laboratory at Teddington, England, on an experimental basis.

The frequencies in use are 5 and 10 Mc. and may be heard at the following times: 4 Mc., 3.44 p.m. to 4.15 p.m.; 10 Mc., 4.59 p.m. to 5 p.m. E.A.S.T.

FREQUENCY ALLOCATIONS

The following is a list of the bands available for use by the Amateur Service in Australia, followed by the types of emission allowed on those bands.

3.5 to 3.8 Mc.—A1, 3, 3a, 6F3.	
7.0 to 7.2 Mc.—A1, 3, 3a, 6F3.	
14.0 to 14.4 Mc.—A1, 3, 3a, 6F3.	
18.0 to 27.22 Mc.—A1, 3, 3a, 6F3.	
28.0 to 30.0 Mc.—A1, 3, 3a, 6F3.	
50.0 to 54.0 Mc.—A1, 3, 3, FM, Pulse.	
144 to 148 Mc.—A0, 1, 2, 3, FM, Pulse.	
288 to 296 Mc.—A0, 1, 2, 3, FM, Pulse.	
576 to 585 Mc.—A0, 1, 2, 3, FM, Pulse.	
1215 to 1300 Mc.—A0, 1, 2, 3, FM, Pulse.	
1300 to 1440 Mc.—A0, 1, 2, 3, FM, Pulse.	
1850 to 1855 Mc.—A0, 1, 2, 3, FM, Pulse.	
10000 to 15000 Mc.—A0, 1, 2, 3, FM, Pulse.	
21000 to 30000 Mc.—A0, 1, 2, 3, FM, Pulse.	
30000 Mc. and higher—A0, 1, 2, 3, FM, Pulse.	

Note.—6F3 emission represents a maximum deviation from the quiescent frequency of plus or minus 8 Kc.

GENTLEMEN'S AGREEMENT

As a result of item 29 of the 1929 Federal Convention, all Amateurs are requested to refrain from using phones between 7200 Kc. and 1058 Kc. Remember the gentlemen's agreement please.

COMMERCIAL INTERFERENCE

New many Amateurs are that that complaint of commercial interference in the Amateur bands. Have you made a written report of your observations? If not, why not now. Send your report to your Divisional Council for transmission to P.E.

UNIFORM PHONETICS

The need for the use of a uniform phonetic alphabet is long overdue. The I.A.R.U. representation of the I.A.R.U. for expression of opinion to be obtained from all Radio Societies throughout the world, with the result that the result was unanimous.

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Northern Zone Correspondent—R. H. Kilby, VK7RN, 8 Galvin Street, Launceston.

As the Inter-Services List is known throughout all Allied Nations the Federal Council suggests that greater use be made of this list. Furthermore it is the one suggested by the I.M.G. Department in a Handbook for the Guidance of Licensees of Amateur Wireless Stations.

ADDITIONS, ALTERATIONS, AND DELETIONS TO AMATEUR CALL SIGNS—MAY, 1950

Additions—

VK3ATW—H. B. Watson, 57 Wandell Rd., Peterham.
 2AKR—K. Whitmore, 5 Elston Ave., West Ryde.
 2APT—H. C. Trevena, 183 Old Kent Rd., East London.
 2AVO—K. V. O'Rourke, 4 Cooper St., Warragunga.
 2AZB—B. D. Woods, 45 Burmiba Ave., Randwick.
 VK3AP—D. D. P. Clarke, 801 Torok Rd., Torok.
 4352—M. P. G. H. Hutchison St., Sutherland.
 5ADY—J. W. Williamson, 38 Westgate St., Ockley.
 5AOP—D. R. Surveys, c/o J. Lark, 10 Swanton St., Geelong.
 5ARP—K. E. Pope, 7 Myers Pde., Nth. Balwyn.
 5ATM—R. N. Napolitano, 37 Skillon, Nunatim.
 VK4MO—M. A. Griffiths, 2 Ipswich St., Torowoma.
 61BS—L. O. C. Baker, 18 Edward St., One Mile, Ipswich.
 VK5EJ—J. Hawke, 128 Stanley St., North Adelaide.
 5HW—A. H. Hentholt, Vaughan Tor., Barri.
 5ND—B. H. B. 115 St. Brighton Rd., Hove.
 5NM—M. N. Mayer, 8 Palmira Ave., Torrens.
 6TF—M. H. Robert, L.R.W.E. Basal, Salisbury.
 VK3ME—M. J. Roper, Madrig, T.N.G.
 9PFF—P. T. Wilmer, Norfolk Island

Alterations—

VK3AL—14 Connelly St., Penzance.
 2AKS—14 Connelly St., Penzance.
 2BX—"Mary Villa," Moorooma Ave., Springfield.
 3FR—Albury Street, Melbourne.
 21U—Flat 2, 28 St. George's Ave., Brimley.
 2KD—C. Scola Street, Herve Ray.
 2ST—78 Mitchell Ave., Kurri Kurri.
 4352—284 Bunge Street, Hove.
 50Z—"Wembury," 43 Elizabeth St., Ashfield.
 7AGR—84 Kinross Street, Waggie Waggie.
 5AHU—Flat 5D, C/o Merrylands and Woodville Rds., Merrylands.
 2AHU—4 Inverary St., Orerood.
 2AR—51 Brindley St., Bondi Junction.
 2AR—54 Bunge Street, Hove.
 VK5EL—15 Elman Rd., Cheltenham.
 3UM—3 Cameron Rd., Essendon.
 3LU—Old Fernside Rd., Reasdale.

FEDERAL

DX C.C. LISTING

PEOPLE

VK3JD (1)	37	148
VK3KE (1)	37	148
VK3KW (2)	37	136
VK3RU (4)	37	134
VK3RS (8)	37	134
VK3RS (9)	37	131
VK3JP (5)	37	116
VK3D (6)	37	118
VK3LS (11)	37	118
VK3HR (12)	37	107
VK3ADT (13)	37	102
VK3D (15)	37	100
VK3JE (7)	37	100
New Member—		
VK3AW (14)	37	105

C.W.

VK3BZ (6)	40	175
VK3EO (3)	40	132
VK3CN (1)	40	151
VK3D (2)	40	148
VK3BZ (10)	39	138
VK3YV (4)	40	134
VK3QI (5)	40	133
VK3HR (8)	40	106
VK3PH (15)	38	136
VK3D (11)	39	135
VK3EK (8)	39	133
VK3BU (18)	39	132
VK3D (12)	37	118
VK3DA (7)	38	118
VK3DO (36)	38	109

New Members

VK3YD (27)	37	105
VK3JL (26)	38	104
VK3XJ (58)	37	101

OPEN

VK3BZ (4)	40	197
VK3BU (8)	39	150
VK3D (1)	40	150
VK3HR (7)	40	161
VK3D (2)	40	160
VK3D (3)	40	150
VK3RW (18)	39	157
VK3JE (12)	39	154
VK3D (19)	39	155
VK3MG (5)	39	139
VK3ES (24)	38	130
VK3D (19)	38	137
VK3D (15)	38	140

New Members

VK3BZ (24)	37	109
VK3JL (53)	38	105

Amateur Radio, July, 1950

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IT563-6 Input Transformer	V.F. Line to single grid 600 ohms/60,000 ohms + 23 V.U.		1 19 10
IT564-10 " "	V.F. Mic. or line to single grid, 50 or 200 ohms/60,000 ohms + 23 V.U.		1 19 10
IT545-9 Driver Transformer	Full Turns Ratio 1.6-1 6F6, 42, 6V6, 45/6L6s, 807s AB2		2 15 11
IT570-9 " "	V.F. " " 6, 5, 4-1 p.p. 2A3s/Class B 809s, etc.		2 17 4
IT571-9 " "	V.F. " " 3, 2.5 2-1 p.p. 2A3s/Class B 800s, 801s, 830Bs, T20s, etc.		2 17 4
IT588-6 " "	V.F. Single 807, p.p. 6V6s, p.p. 2A3s, etc./p.p. 807s Class B		2 1 6
PT1525-21 Filament Transformer	Two 866As 1,000 V. DC working		2 1 5
PT1371-8 Power Transformer	500, 750, 1,000 per side at 300 Ma.		6 8 1
Z983-22 Input Choke	20/5 H. at 30/300 Ma. 1,000 V. DC working		2 8 9
Z986-22 Filter " "	10 H. at 300 Ma. 1,000 V. DC working		2 11 6

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Wm. Willis & Co., 428 Bourke St., Melb. (MU 2426); J. H. Magrath & Co., 208 Lt. Lonsdale St., Melb. (Central 3688).

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Phones: MX 1150, MX 1150

the chair, the meeting got away to the prompt start and after the minutes and welcome to visitors the evening was turned over to the Victorian Forestry Commission who was represented by Mr. Weste. The agenda was a most interesting and varied, the various activities of the Forestry Commission. The films presented were "Green Gold," "The Hand of Man," "Soil Erosion," "Wild Animal Life." Of course the main interest was the scenes of the various types of forest and the great salmon in the spotlight of bush fire. The show lasted for about two hours and a special vote of thanks was recorded to Mr. Weste and his assistants for their efforts in presenting this phase of public activity before the public.

The monthly meeting for May was held on the third Friday of the month and we draw the attention of all members to the alteration in the date of the monthly General Meeting. This Division now holds its monthly meetings in the I.R.E. Rooms, Wickham Street, Valley. Meetings are held on the third Friday of each month.

During the month quite an influx of visitors came and went to and from the zone; firstly, we had a large group of KGB men waiting through after special permission to enter the zone. They were on work on Alan's BC344 was done, the generator in particular came in for special attention and I was able to show them the various parts of the machine. Other visitors were 3PM and 3AKP who arrived under a Ham trip from VK6, to camp at 3AM's. What I would like to know, however, is why Lin and John were not present. I was not given any information on the Monday morning, true it was not clear to me, but why the emergency? Also why were Bill and I not there? I was told after getting home: true the three day generation was taking off. After seeing back, Lin and John paid a visit to Bill, to see how a good country Ham was getting on. I had also how to get state in with 3 inch mail, to

As the year, which ends in June, draws to a close members had a lengthy discussion on the syllabus items for the next 12 months. Members congratulated club member Peter Grosswaste on attaining his Ham ticket. One of the other members not present on this occasion also was successful in getting his ticket. He is Brian Lloyd. Members spent a very pleasant evening at the following meeting when a display at the club rooms of various pieces of equipment was viewed, then members visited the shack of SWT. Amongst Bill's gear was

He'll be calm, relaxed, playful, easy-going and will still be almost completely in his twenties and will give you a full view to expectations although he is that busy in his off work hours raking the extra chips in, that he has not the time for much much. Hedin. Of course, there is also the chance, that he is a little bit of a lady's man, but I guarantee that he will not be on the air for some time yet. He is another one who is getting rich quick on the side. Look out that you and "Skinny" don't both become the richest men in the cemetery. SWM is a very nice, friendly, and very intelligent man. VKE after a spot of relieving duties and I believe that every time that the boys up there answer the phone these days a feminine voice says, "Is that you 'Skinny' or my pig?" When you got there haven't you longer? I think that I would do a spot of relieving duties up there; what am I saying!

The May meeting showed a few of the many call signs reacting an ailing. Seen among an average gathering such comparative strangers as CDB, HBR, SAP and BGO. A new member in GTY was welcomed in the usual manner. One of the principal items of business for the evening was a report from the new Contest Committee given by GRU in the absence of the Chairman, GDD. Jim dealt at length with future contest activities in giving details of new and old contests which will be conducted in the coming year. The first will be the popular 40 metre "Scramble" to be held on 30th June (the echoes should be just about dying down by the time you read this) and a full scale contest covering all aspects of amateur interest from 2 to 2 metres or even higher!

The Dinner Committee reported favourable progress for the big event on 8th June (By now only a memory, I hope it is a pleasant one, indicating the time of writing are for a good evening with better support from home and country members than in previous years). Trophies are to be awarded to the first three place-getters in the "Scramble." First will receive the 1950 President's Trophy which GKN assures me will be well worth the winning. Also allocated in this contest will be GKN's prize of one guinea for the best performance on a "miles-per-watt" basis.

Credit is due to whoever thought up the idea of putting the 30th Convention on the wire for the benefit of the States. The copy was run at the May meeting per medium of 65W's recorder and gave an intimate and interesting insight to the Convention. The quality and continuity were excellent and voices were really "in the room."

That good-about mentioned last month as being in Albany, N.Y., turned up at the meeting and took over the proceedings. Where was he last month? Could it be Cus at last? Before I go any further I must also take a bow, a bow out. This will be my last effort as I am handing over to GAs, Alice Smith, beginning next month. Alice will also handle the GSWI broadcasts as soon as he can get the official gear rigged up at his QTH. My reason? A change of occupation involving a

CFD has come back to 40 metres with a signal from Bunbury and has been renewing old acquaintances over the air. SWZ is a pleased man these days with his new "Bummerong" giving him a handy 40 watts. Net had for d.e. mail: Harry has little discovered a talent for gardening or perhaps a love of the XLV form (or yout) and his garden is beginning to benefit considerably. And other Ham who professes to derive pleasure from tilting the soil. p. 2XG, from Keweenaw, W.V.

Hama collect various types of junk in their pizzuti, their favorite hobby, but one of the strongest has been heard on the other day. He had been filling his basket with bones and some pieces of plate glass he had gathered and was sending along. Sibi's inquiry revealed the use of handles as spacers on an antenna feed line. It's an idea! The plate glass took the place of the ceramic insulator, so will then a lovely oil-bottle? Who said the modern Ham was losing his interest?

Remember the lost Ham of Geraldton, SUN, who has been without power for months. Tired of waiting for promises to eventuate, Cyril is now investigating the possibilities of a battery operated

fig. 6A2 drop in contemplation of plans for his new shack which he hopes to complete during his forthcoming holidays. Heard another newcomer to the Ham fraternity on 40-80Y, complete with a brass Scots' secret, welcome to VK8 Tom!

Seven megacycles is showing signs of its winter incarnation with a few of the winter intruders appearing on the band. One station which really had the 40 metre regulars gasping was GRW coming out of hibernation with a QRP v.f.o. and working up to Geraldine. Mick wasn't the only one to state a comeback. 6SK was seen working on 40-80Y and 40-15Y. The 40-15Y was working on 6A6 shack still complete with modulator complete.

Q SWR has taken to the country tearing business and I understand he turned up in Albany the other day. Also heard checking his rig on 40 was SWR who now sports a good antenna for that band. Could all this activity augur well for our 7 Mc. "Scramble"? Another "Bummerong" advocate is 66-100 Bob who was recently awarded a rotary converter to provide the very necessary a.c. for the not-so-popular 40 c. SWL still running a pair of 811s on ten, but Frank finds them a bit hard to drive. Well, I hope you all have (or had) a good time at the Dinner. This business of writing letters to the Editor is a hazardous one to read after they occur, has it disadvantages!

6EO downed Minding has been working steadily at his favorite hobby. Eric now has a fine new beam for ten metres and to go with it he has a turret switched transmitter. Spotted a 35 ft. tower in the backyard of 6JW. Hope it's soon in a vertical position supporting a beam or two. John, 6JAS, is planning to establish the W1 Z in his QTH as soon as he can hear more. Also that band. If he is going to take over these notes, he will have to keep going on 40 anyway. Heard 6LW operating his portable rig from up Boulder way and putting quite a fair signal down into the Metropolitan area. Well, I guess that's the end of the 73 for all.

NORTHEAST ZONE

an endeavour to ascertain whether or not it would be necessary to water the lawn on Saturday. The weather was so variable that it was difficult to form a judgment. At the same time, however, the weather was so variable that it was difficult to form a judgment. At the same time, however, the weather was so variable that it was difficult to form a judgment.

Activities have been somewhat desultory this morning due possibly to our blanket-bomb weather. If this is the best the gung on Macquarie Island can send up to us, I won't work a VKI again, or will I? Believe 7BQ has not been enjoying the best of health of late and trust that ere this is printed, his recovery is complete. 7XW seems to have deserted? 7Mc. and maintains a deep silence, to my ears anyway. Let's hear from you Chris. Supply the shins, some something and hop home to the States. Fight the night!

Friday nights. The DM club always comes out of the ether around 7 M.c. way by print time as he tells me of 100 watts and an #13 and the erection of mast, etc. Even went to the trouble of a shack spring clean—horrible thought. TLE is a very nice fellow, a very open sports, his main impression being, I believe, the ease of erecting rhombics on all the decent DX spots. I'll bet that even though the best conditions would coincide with lambing time or something. TLE is a very nice fellow, a very open sports, he'll be herding the goal posts from the football club for his antenna but, on looking through the sports column, they only seem to need the little ones

7PF seems to have successfully cleaned up the little troubles that beset us all at times and at my QTH the signal is OK. Keep it that way and you'll find your feet very wet. YDB still very QRL house-building and not very much time for Ham Radio, but it will keep, Doc. Here, my single 807 became lonely so I gave it a mate, but it looks like incompatibility as they won't behave on 10 yet--ah well, maybe there's a lot to be said for single blessedness.

Our next meeting is scheduled for 14th July. I wonder if some kind bird would whisper that date into the shell like pink ear of our State QSL Manager. Oh yes! Be the end of para one. It was a beautiful, sunny, cloudless day!!!

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

4 Sunbeam Ave., Croydon, N.S.W.
Editor "A.H." Sir,

I would like you to publish the following. On Tuesday night, 9/5/50, my shack was broken into and my Marconi B88 Receiver was stolen. Entry was gained by breaking away the Sbro cement sheets near the ground. I would like to suggest that Hama line the inside of their shacks or screw hardwood battens every foot or so up from the ground. Several VK2 Hama that I know of have lost valuable gear in similar circumstances.

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Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line.

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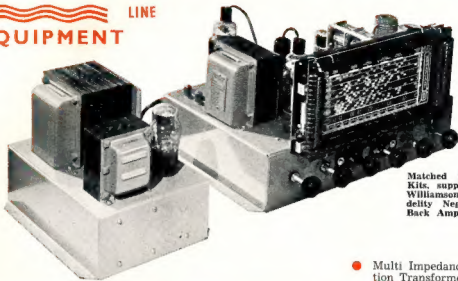
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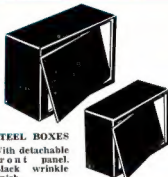


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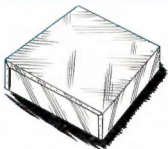
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